REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1-6 and 8-17 are in the case.

I. THE INTERVIEW

At the outset, the undersigned wishes to thank the Examiner and his supervisor for kindly agreeing to discuss the outstanding final rejection in this case. The interview was held on March 31, 2007,and the courtesies extended by the Examiners were most appreciated. During the interview, it was suggested that the claims might be amended to recite the more limited transitional language "consisting essentially of" instead of "comprising", in order to exclude elements disclosed by the cited art which are deleterious to the claimed method and/or the desired outcome. No firm agreement was reached as to whether such an amendment would place the case in allowable condition.

II. THE OBVIOUSNESS REJECTION

Claims 1-6 and 8-17 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by U.S. Patent 4,339,509 to Dardi et al. in view of U.S. Patent 4,743,514 to Strangman. The rejection is respectfully traversed.

The invention as claimed is directed to a method of stabilizing adherence of a ceramic layer to a bond coat of a TBC system. The method consists essentially of incorporating silicon into the bond coat, and maintaining cobalt present in the bond coat at a level of 1-5 wt% and yttrium present in the bond coat at a level of 0.1-8 wt%.

As conceded on page 2 of the Action, Dardi fails to suggest the presence of cobalt in the range of 1-5 %, as required by the invention as claimed. This deficiency is not cured by Strangman. Strangman discloses a coating for protecting gas turbine components. While cobalt is broadly disclosed as being present in a range of 0-10%, it is clear from the disclosure at column 7, beginning at line 42 that cobalt is preferably present at "a zero or trace level". Indeed, none of the working examples shows the presence of any cobalt (see Table I at column 8, lines 37-49). Thus, there is no suggestion in Strangman of the cobalt range of 1-5 % as claimed in the present case.

In addition, as disclosed at column 7, beginning at line 15 of Strangman, "Tantalum or niobium additions in the coating strengthen the coating, and can alter its thermal expansion coefficient to more closely match that of the underlying substrate." In contrast, it has been discovered, according to the present invention, that a detrimental effect occurs when tantalum is added to a silicon-containing bond coat. In this regard, attention is directed to the attached microphotograph showing that the co-presence of tantalum and silicon in interdiffusion zones of the coating causes formation of unwanted TaSi and TaTiSi intermetallic phases. These phases lead to a hardness increase and embrittlement of the coating. Thus, addition of tantalum to silicon-containing bond coats causes early TBC failure, which is clearly undesired.

While Strangman broadly discloses tantalum in an amount of 0-10%, the preferred embodiments all contain increasing levels of tantalum. Indeed, Strangman discloses that the coating having the designation "SCC103" shown in Table I containing 7.0 % of tantalum "exhibited the best combination of oxidation resistance and diffusional stability of the coatings tested" (column 9, lines 36-38). Based on Strangman, therefore,

the person of ordinary skill would have been motivated to include increasing amounts of tantalum to obtain a coating exhibiting superior oxidation resistance and diffusional stability. In contradistinction, increasing the amount of tantalum in the present invention leads to the deleterious formation of unwanted TaSi and TaTiSi intermetallic phases, which result in increases in hardness and embrittlement of the coating.

As claimed, the method consists essentially of incorporating silicon into the bond coat, maintaining cobalt present in the bond coat at a level of 1-5 wt% and maintaining yttrium present in the bond coat at a level of 0.1-8 wt%. The consisting essentially of language excludes the presence of deleterious amounts of tantalum which would otherwise cause unwanted hardness increases and embrittlement.

Based on the above, it is believed that a person of ordinary skill would not have been motivated to arrive at the presently claimed invention based on the combined disclosures of Dardi and Strangman, since Strangman encourages the addition of tantalum, an element which is clearly deleterious in the context of a silicon-containing bond coat system of the present invention. A *prima facie* case of obviousness does not therefore arise in regard to the invention as now claimed. Withdrawal of the obviousness rejection is respectfully requested.

Favorable action on this application is awaited.

FENG et al
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Respectfully submitted,

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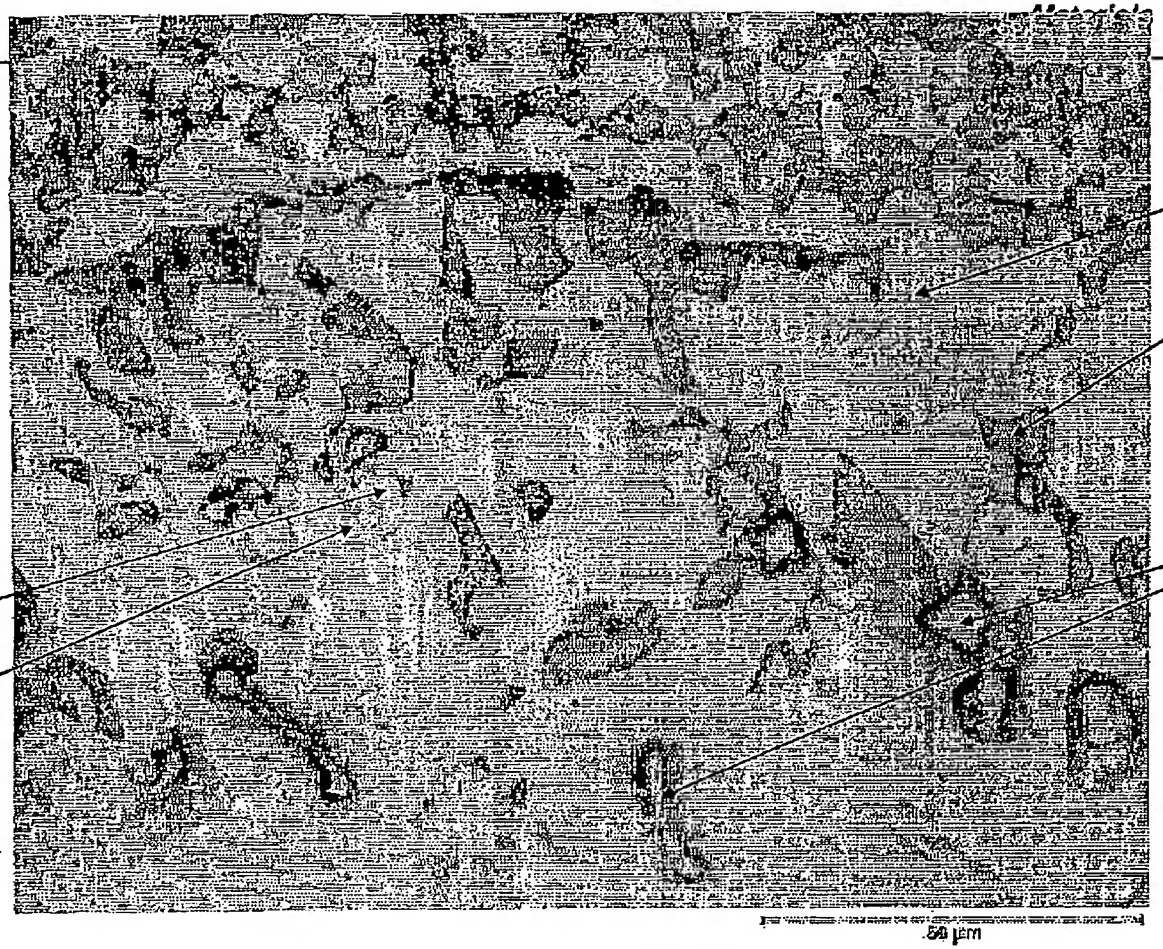

The co-presence of Ta and Si in the inter-diffusion zone caused formation of TaSi and TaTiSi intermetallic phases, which lead to a hardness increase and embittle the coating. Adding Ta to Si-containing bond coat will cause early TBC failure.